

Remarks

The Amendments to the Claims

The two independent claims – method claims 1 and 13 – have been amended to recite that the two stamping steps are performed using a punch and a forming surface tool. Applicant submits that this meaning of “stamping” has been inherent a part of these claims from their original presentation. This amendment does raise any new issue. The term “stamping” has been consistently used in this specification to refer to the forming of a metal sheet by stretching it between a punch and a forming surface. This meaning of stamping is set forth in paragraphs 0002, 0005, 0008, 0010, 0019, 0028, and 0030 of the specification. No other usage of the term stamping is proposed in this case. And this usage of the term “stamping” is consistent with manufacturing practices in an industry in which millions of automotive body panels (doors, hoods, deck lids, and the like) are formed each year.

Independent method claim 13 has been amended to specify the stamping of aluminum body panels. This embodiment of applicant’s invention is the basis of the illustrative examples in the specification and the illustrations of the drawing figures. This amendment raises no new issues in this case.

Dependent claim 14 has been amended to conform it to its independent claim 13.

The Claim Rejections

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krajewski et al. (US Patent 6,038,911) in view of Biondich (US Patent 5,776,270).

The Examiner is respectfully requested to reconsider and withdraw the rejection of claims 1-14 for the following reasons.

Summary of Argument for Allowance of Claims 1-14

The Manual of Patent Examining Procedure (MPEP) in Section 2141 confirms that Patent Examiners have the responsibility of applying the Graham factual inquiries in determining patentability of claims at issue. Section 2141 states the tenets of patent law that are to be adhered to when applying 35 U.S.C. 103 in making such a determination. These tenets include:

(A) The claimed invention must be considered as a whole;

(B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;

(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and

(D) Reasonable expectation of success is the standard with which the obviousness is determined.

It is respectfully submitted that, when the combination of the Krajewski et al (hereafter Krajewski for brevity) and Biondich references are considered as a whole, they fail to suggest the claimed invention considered as a whole.

Since the combination of Krajewski and Biondich fail to teach or suggest all the claim limitations of independent claims 1 and 13 and their dependent claims, the Examiner has failed to establish *prima facie* obviousness of the claimed invention as required under MPEP 2143.03. Accordingly, the rejections of each of claims 1-14 should be withdrawn and these claims allowed.

(A) The Claimed Invention as a Whole

The claimed invention will be discussed in terms of the recitations of independent method claims 1 and 13. These claims pertain to the stamping of aluminum alloy sheet material into formed articles (automotive body panels in claim 13) where the shape of the article cannot be stamped into the sheet in a single stamping operation without exceeding the strain limit of the sheet material at a location in the shape of the article.

As is apparent from the applicant's specification, sheet metal stamping is a large and focused industry even when considered only in the context of making body panels for cars. Millions of such stampings are made each year in the United States and abroad. The investment in presses and tooling is enormous. Each vehicle has its own set of panels and skilled workers are required to design and build punches and forming surface tools to shape the sheet metal panes conceived by a vehicle designer. Most of the stamped parts (certainly the body panels) must be produced with minimal forming steps to yield formed undamaged surfaces that can be painted or otherwise decorated to a commercially acceptable finish. After years of manufacturing experience, the metal stamping art learned to make highly formable steel sheet material and to stamp steel body panels approaching the functional and decorative body shapes sought by the designers. But with current need to reduce vehicle weight for fuel economy, car

designers have turned to aluminum alloy sheet materials. These sheet materials are not as formable as ferrous metal sheet material. Often one skilled in the art of metal stamping cannot make aluminum body panels of the same shape complexity that can be stamped from a steel sheet material.

The invention of claims 1 and 13, taken as a whole provide a method of making more complex shapes from aluminum sheet material. Where an article shape cannot be stamped in an aluminum sheet because the forming exceeds the straining limit at a particular location(s) in the proposed part, the claimed method offers a fix to the problem. A preform shape is predetermined, based on stress/strain forming properties of the aluminum sheet material, for a deformation precursor of the final article shape. The deformation precursor shaped is stamped with the results that a strain-hardened region is created in the precursor. The stain-hardened region (at least) is annealed to temper the strain hardened region. The precursor shape is then stamped into the desired article (body panel) shape. This process is useful in making light-weight aluminum body panels as recited in claims 13 and 14.

(B) The Krajewski and Biondich References Considered as a Whole

Krajewski produces a corrugated aluminum metal sheet with an integral mounting flange. And it is done by stamping operations. But the round corrugations illustrated in Krajewski's Figures 3 and 4 are produced by simple bending of the sheet material. And some of these rounded bends are simply flattened into stiffening pleats by a squeeze deformation step. It is apparent that no severe metal deformation is involved in this Krajewski method for making useful vehicle door reinforcements. And Krajewski doesn't say that his method involves high deformation stamping of aluminum sheet metal, or that there is any problem in forming the corrugated and edge-flattened product. It is obviously an advantage of the Krajewski reference method to be able to make a useful anti-intrusion barrier without resorting to high deformation stamping. But this Krajewski reference disclosure, considered as a whole, bears no relationship to the subject claimed method. The Krajewski method involves only a simple corrugation step and a limited flattening step. But the two steps are wholly distinct in forming the flanged barrier and not the result of a stress/strain analysis or the need to stamp a preform to avoid tearing metal in arriving at a finished shape. And the Krajewski disclosure provides no help in the stamping of aluminum alloy body panels as recited in claims 13 and 14.

The Biondich doesn't involve stamping at all. A word check of the document does not locate the word "stamping", and the disclosure, taken as a whole doesn't disclose a metal stamping operation. The whole disclosure is directed to the expansion of a portion of a previously formed aluminum alloy can. Electromagnetic force is used in a symmetrical expansion of the circumference of the can. Biondich states that "pneumatic, hydraulic, mechanical, elastomeric, explosive, and spin" expansion techniques might otherwise be used. This disclosure does not teach or suggest stamping aluminum alloy sheet material using a punch and a forming surface tool. The Biondich disclosure doesn't relate to the Krajewski reference disclosure or to his claimed invention in this application. Obviously, Biondich offers no instruction for making automotive body panels.

There is no basis in either the Krajewski or Biondich references for combining their disclosures. Krajewski describes the simplest of stamping operations without a hint of any need for further input of technical advice. And Biondich has nothing to do with any stamping operation contemplated by Krajewski. These references do not suggest the "desirability and thus the obviousness of making the combination." The Examiner is not justified in combining Krajewski and Biondich in rejection of claims 1-14.

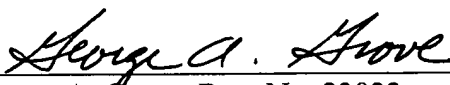
C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention

For the reasons given above, the only logical technical link between the Krajewski and Biondich references is the vision afforded by the claimed invention. But this amounts to impermissible hindsight.

Conclusion

Applicant's claims clearly distinctly define a new method for the forming of structurally complex parts by the stamping of aluminum alloy sheet metal. Applicant's invention is particularly applicable to the stamping of automotive body panels. The combination of Krajewski and Biondich does not teach or suggest the claim limitations of independent claims 1 and 13 and their dependent claims. The Examiner has failed to establish *prima facie* obviousness of the claimed invention as required under MPEP 2143.03. Accordingly, the rejections of each of claims 1-14 should be withdrawn and these claims allowed.

Respectfully Submitted,



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